CLAIMS

1. An image processing system comprising:

a photographing apparatus; and

a processing apparatus,

the photographing apparatus comprising: a plurality of light-emitting devices for illuminating a subject and emitting light with the characteristics of a plurality of spectroscopic distributions independently varied in at least a visible-light area; an image pick-up optical system which forms a subject image illuminated by the light-emitting devices; an image pick-up device unit which picks-up the subject image formed by the image pick-up optical system and outputs an image signal; and a control unit which controls an operation for capturing a plurality of subject spectroscopic images by selectively lighting-on the plurality of light-emitting devices in accordance with the characteristics of the spectroscopic distributions and by varying the selection of the plurality of light-emitting devices with the synchronization of the light-on operation and the operation for picking-up the image by the image pick-up device by a plurality of times,

the processing apparatus comprising: a calculating unit which performs desired image calculation from the image signal.

2. The image processing system according to Claim 1, wherein the control unit sets a group comprising a plurality of devices having at least one light-emitting device from among the plurality of light-emitting devices in accordance with the characteristics of the spectroscopic distributions, determines the light-on sequence of the plurality of devices in the set group, lights-on the light-emitting devices in the devices in accordance with the light-on sequence for selective light-on operation, and controls the plurality of spectroscopic images.

3. The image processing system according to Claim 2, wherein the control unit sets a plurality of types of the groups and controls the operation for using the set groups necessary for application.

4. The image processing system according to Claim 3, wherein the control unit sets a group of the light-emitting groups comprising the light-emitting devices of blue in the visible light area, the light-emitting devices of red in the visible light area, and the light-emitting devices of green in the visible light area, among from the plurality of light-emitting devices, sequentially lights-on the light-emitting devices of the group every image pick-up frame, and

controls the operation for picking-up a three-primary-color moving image by the image pick-up device unit.

5. The image processing system according to Claim 3, wherein the photographing apparatus further comprises: a photographing operating unit which inputs at least an instruction for starting a spectroscopic image photographing operation, and the control unit controls the operation for capturing the plurality of subject spectroscopic images in accordance with the input of the instruction for starting the spectroscopic image photographing operation from the photographing operating unit.

6. The image processing system according to Claim 5, wherein the photographing operating unit comprises a pressing button switch, and the control unit controls the operation for changing the group upon pressing the button switch.

7. The image processing system according to Claim 6, wherein the control unit controls light-on timings of the devices of the changed group, upon pressing the button switch.

8. The image processing system according to Claim 1,

wherein the control unit controls the operation for starting the image pick-up operation by the image pick-up device unit after starting the light-on operation of the light-emitting device and for ending it before lighting-off the light-emitting device.

9. The image processing system according to Claim 1, wherein the image pick-up device unit comprises: a spectroscopic unit which performs the spectroscopy of incident light into light with a plurality of wavelengths; and a plurality of image pick-up devices which pick-up the light with the plurality of wavelengths subjected to the spectroscopy by the spectroscopic unit.

10. The image processing system according to Claim 1, wherein the image pick-up device unit comprises a color image pick-up device having a color filter array.

11. The image processing system according to Claim 1, wherein the photographing apparatus further comprises: a spectrum sensor which senses the characteristics of the spectroscopic distributions of the light-emitting devices.

12. The image processing system according to Claim 1, wherein the photographing apparatus further comprises a

spectrum sensor which senses the characteristic of the spectroscopic distribution of ambient light.

13. The image processing system according to Claim 1, wherein the photographing apparatus further comprises an abutting portion which is abutted to the subject at one end thereof.

14. The image processing system according to Claim 13, wherein the abutting portion comprises a flexible material with cylindrical shape.

15. The image processing system according to Claim 13, wherein the abutting portion comprises a material which rejects or reduces the influence from ambient light.

16. The image processing system according to Claim 13, wherein the abutting portion is detachable to a casing of the photographing apparatus.

17. The image processing system according to Claim 1, wherein the processing apparatus further comprises an image memory unit which stores the subject spectroscopic image photographed by the photographing apparatus, and

the calculating unit calculates a desired image from

the image signal stored in the image memory unit.

18. The image processing system according to Claim 17, wherein the calculating unit calculates a signal for displaying the subject image which is color-reproduced at the high fidelity level based on the subject spectroscopic image stored in the image memory unit.

19. The image processing system according to Claim 18, wherein the processing apparatus calculates profile information necessary for calculating the signal for displaying the subject image which is color-reproduced at the high fidelity level based on the data captured by the photographing apparatus.

20. The image processing system according to Claim 17, wherein the calculating unit determines or analyzes the subject based on the subject spectroscopic image stored in the image memory unit and outputs the determining or analyzing result.

21. The image processing system according to Claim 1, wherein the image pick-up device unit changes a frame rate for the image pick-up operation.

22. The image processing system according to Claim 1, wherein the photographing apparatus further comprises a photographing operating unit for inputting at least an instruction for starting the spectroscopic image photographing operation, and

the control unit controls the operation for capturing the plurality of subject spectroscopic images in accordance with the input of the instruction for starting the operation for photographing the spectroscopic image from the photographing operating unit.